

## REVIEWS

*California Vegetation*. By V. L. HOLLAND and D. J. KEIL. 1995. Kendall/Hunt Publishing Company, Dubuque, Iowa. xii + 516 pages. ISBN 0-7872-0733-0.

*California Vegetation* is a welcome addition to the limited market of textbooks available for courses emphasizing the plant communities of California. Holland and Keil provide a good grounding in floristics and community description as well as a summary of the major topographic, geographic, geologic, and socioeconomic influences on the vegetation of California. As the authors state in the introduction, information about each of the communities is intermediate in informational content between *California Plant Life* (Ornduff 1974) and *Terrestrial Vegetation of California* (Barbour and Major 1977). Both the Ornduff and the Barbour and Major texts are excellent but offer too little or too much detail, respectively, for a class in California plant communities. Holland and Keil's work is ideal for an upper-division undergraduate course. It is a major plus that the nomenclature is up-to-date, relying on *The Jepson Manual* (Hickman 1993) as a taxonomic reference. *California Vegetation* could also be a nice complement to a course in plant taxonomy.

Chapter one provides an informative compilation of "fun facts" about California's botanical diversity and the factors that shape this diversity both presently and historically. It is useful to have this information published in a textbook context. For example, statistics on land area, numbers of exotic, endemic, and rare species are provided with their changes in representation through time.

Chapters two and three discuss the abiotic factors that influence the distribution of California's plant communities. Although it is difficult to comprehensively cover any topic, I would have liked to have seen at least some mention of biogeochemistry and other ecosystem level considerations, perhaps as another subheading in chapter two.

Chapter four provides a succinct but thorough summary of the formation of the present floristic diversity in California.

By necessity, Holland and Keil have generalized plant communities for the genre in chapter five. Although they include a comparison of their system with the California Native Plant Society system by Sawyer and Keeler-Wolf (1995) in the appendix, I would have liked to have seen the Sawyer and Keeler-Wolf system integrated more throughout. The need for the standardization of plant community classification within California has been long standing. It is likely that *California Vegetation* will become a training manual for many years of California botanists to come and thus it is the ideal forum in which to encourage unification on the community classification front.

The core of the book (chapters 7 through 21) describes, in a general fashion, the major plant communities of California. The community descriptions are very readable and the level of detail is adequate. A list of dominant and subdominant species is provided in an organized manner for each major community. For example, chapter 15 addresses oak woodlands; a list of subdominants is provided and six specific communities (Coastal Live Oak, Valley Oak, Foothill, Northern Oak, Southern Oak and Island Oak) are discussed in more detail. Chapter 11 on grasslands presents an objective summary of the composition of valley grasslands in presettlement times. The human impact sections at the end of a number of the chapters is particularly useful in a modern survey course.

One of the real benefits to this volume is the last two chapters on the anthropogenic affects to native plant communities, a topic that can not be avoided when discussing California's natural environment. However, the weed list easily could have been more extensive, too many important species are missing. Serious widespread wildland pests

listed by the California Exotic Pest Plant Council are not included, such as *Arundo donax*, *Carpobrotus edulis*, *Cortaderia jubata*, *Eucalyptus globulus*, *Pennisetum setaceum*, *Tamarix* spp. and *Ulex europaeus*.

Minor annoyances are the poor print quality, which is particularly noticable in the photos and figures, and an overabundance of typographical errors.

I am currently using this text in a plant ecology course and, other than the complaint that the price is excessive for a paperback (\$47.00), the students have received *California Vegetation* quite favorably. This group of students has interests ranging from botany to cell biology to wildlife management and find the book informative and the writing style clear and concise. *California Vegetation* has value not only as a textbook but also as the most current desk and field reference on general plant community information. Academics, agency botanists, and consulting biologists should all find something of use in this valuable source.

#### LITERATURE CITED

- BARBOUR, M. G. and J. MAJOR (eds). 1977. Terrestrial vegetation of California. John Wiley and Sons, New York.
- ORNDUFF, R. 1974. California plant life. University of California Press, Berkeley, CA.
- SAWYER, J. and T. KEELER-WOLF. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento, CA.

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*Hybrid Zones and the Evolutionary Process*. Edited by R. G. HARRISON. 1993. Oxford University Press, New York. 364 pages. Hardcover \$72.00. ISBN 0-19-506917-X.

This book is a collection of papers that were presented as part of a symposium on hybrid zones given at the Fourth International Congress of Systematic and Evolutionary Biology (ICSEB) at College Park, Maryland, in 1990. Additionally, the editor solicited chapters from persons who were not part of the original symposium. The book is divided into two major parts; the first four chapters examine some of the major concepts identified with hybrid zones. The second part consists of eight chapters that are case studies of hybrid zones, but only one of the eight is an example from the plant kingdom. All of the chapters are well illustrated.

From the onset I must say that as a botanist I was disappointed that the book is heavily concentrated on zoological examples, although most evolutionary biologists would agree that natural hybridization in plants is much more common than in animals. In my view this is a serious flaw and it may limit the interest and benefit that the book will have for botanists; because aspects of hybrid zones, including their origin, structure, evolutionary consequences, and fate in plants undoubtedly will be different than for animals. One can not simply extrapolate the aspects of hybrid zones for plants based on animal examples.

In chapter 1, editor Richard Harrison, discusses the hybrid zones from a historical perspective. He explains the basic differences in hybrid zones between animal and plants; plant hybrid zones tend to be diffuse, characterized by local hybrid swarms, whereas animal hybrid zones tend to be well defined. He goes on to define "hybrid" and "hybrid zone" as used by evolutionary biologists of the past and present and explains the controversy that surrounds the definition of these terms. He also introduces the major issues (controversies) in hybrid zone research. Briefly the issues are; the taxonomic treatment of the hybrids and species concepts; origins of hybrid zones, dynamics of stable hybrid zones (Do they represent stable equilibria?); fates of hybrid zones; and causes and consequences of introgressive hybridization.

Chapter two, by N. H. Barton and K. S. Gale, addresses the genetic analysis of